MEATS
CAREER DEVELOPMENT EVENT

Purpose

The meat industry is an important component in Missouri agriculture. The Meat Identification and Judging CDE has been developed to encourage secondary agriculture students to develop skills and abilities needed to enter and advance in careers in the meat industry.

Objectives

The State Agriculture Meat Identification and Judging CDE is designed to:

I.   Develop employment knowledge for students who are interested in exploring and pursuing a career in the meat industry.

II.   Aid the local agriculture instructor in motivating students to become involved in the industry of animal marketing and merchandising.

III. Encourage the development of broader analytical skills, critical thinking strategies, and an understanding of appropriate meat terminology for high school students.

IV.   Develop the students' ability to evaluate meat animal products in order to optimize economic returns to producers and industry as well as to meet the needs of the consumer.

Objectives – Students participating in the Career Development Event should be able to:	Show-Me Standards	
	Knowledge Standards (Content Areas)	**Performance Standards (Goals)**
1. Develop employment knowledge for students who are interested in exploring and pursuing a career in the meat industry.	CA.3	1.5
	MA.1, MA.3	3.5, 3.6, 3.8
2. Aid the local agriculture instructor in motivating students to become involved in the industry of animal marketing and merchandising.	SC.3	4.4, 4.7, 4.8
	SS.4	
3. Encourage the development of broader analytical skills, critical thinking strategies, and an understanding of appropriate meat terminology for high school students.		
4. Develop the students' ability to evaluate meat animal products in order to optimize economic returns to producers and industry as well as to meet the needs of the consumer.		

CORRESPONDING SECONDARY AGRICULTURE CURRICULUM

Course and/or Curriculum: Agriculture Science I

Food Science and Technology

Unit(s): Introduction to Animal Products

Unit II – Food Processing
Lesson 6 – Products and By-Products from Meat Animals
Lesson 7 – Processing Meat Animals
Lesson 8 – Quality Grades, Inspections, and Brand Names in Meat Industry

Event Format and Scoring

The event will consist of three sections:

1. Identification of Retail Cuts of Meat (240 points). Various retail cuts of meat, 40 in number (beef, pork, lamb), and variety meats (as liver, tongue, etc.), will be placed in a convenient manner and given an identification number. The contestant will write in the number opposite the name of the cut on the scorecard. Approximately one minute for each cut will be the time allowed for identification.

2. Judging Classes of Meat
   a. (200 points). Four classes will be judged. The classes will consist of four exhibits of beef, pork, or lamb carcasses or primal or retail cuts of beef and pork. Primal cuts may include fresh hams, pork loins, pork Boston shoulders (butts), pork picnic shoulders, beef ribs, beef chucks, beef loins, beef rounds, beef strip loins, and beef rib eye.
   b. (50 points). Ten questions will be required on one of the judging classes. The format will be a 50 point multiple choice/true-false test relating to placing the class.
   Example: Which rib eye has the highest degree of marbling?
   (a) 1 (b) 2 (c) 3 (d) 4.

3. Test (60 points). The test will consist of 20 multiple choice questions based on the Meats Units available from IML.

4. Meats formulation problem (50 points).
   See provided sample problems or see the National Career Development Events Meat Evaluation and Technology Section for details (www.FFA.org/programs/cde/documents/cde_meats.pdf).

Event Rules

1. Contestants must not communicate with each other while the event is in progress.

2. All coaches, alternates, and others, except the superintendent, his/her assistants, contestants, and the judges will be excluded from the Meats Laboratory. Any assistance given a team member from any source during the contest will be sufficient cause to eliminate that team from the contest.

3. Official placing and discussion of classes will be held immediately following the event. Instructors, contestants, alternates and other interested persons are encouraged to attend.

4. Contestants should come prepared to work in a room temperature of 40°F. They should have heavy sweaters, coats, or other warm clothes.

5. In the retail cut identification class, using Form 7, six (6) points will be given for each cut that is correctly identified. The perfect score for the identification class is 240 points, and for each of the placing classes, the perfect score is 50 points.

References

Yellow Pages – American Meat Institute, P.O. Box 3556, Washington, D.C. 20007. Phone: 703-841-2400.

National Association of Meat Purveyors (1988). The Meat Buyers Guide. 8365-B Greensboro Drive, McLean, VA 22102; Phone: (703) 827-5754.

National Live Stock and Meat Board. Uniform Retail Meat Identify Standards. Department of Merchandising, National Live Stock and Meat Board, 444 North Michigan Ave., Chicago, IL 60611.

Introduction to Animal Products (1998). IML, 1400 Rock Quarry Rd. Q156, University of Missouri, Columbia, MO 65202. (800) 669-2465 www.iml.coe.missouri.edu.

Meat Evaluation Handbook. (National Cattlemen's Beef Association 2001) IML, 1400 Rock Quarry Rd. Q156, University of Missouri, Columbia, MO 65202. (800) 669-2465 www.iml.coe.missouri.edu.

Meat Judging and Grading Revised 1998. IML, 1400 Rock Quarry Rd. Q156, University of Missouri, Columbia, MO 65202. (800) 669-2465 www.iml.coe.missouri.edu.

Meat Judging: Fundamentals - Video Active. IML, 1400 Rock Quarry Rd. Q156, University of Missouri, Columbia, MO. 65202. (800) 669-2465 www.iml.coe.missouri.edu.

National Career Development Events (2006-2010). National FFA Organization.

PRIMAL CUTS	RETAIL CUTS	SPECIES	PRIMAL	RETAIL
	Oxtail	B	16	90
	Sweetbread	B	16	91
	Tongue	B	16	92
	Tripe	B	16	93
VARIOUS	Beef for Stew	B	17	94
	Cube Steak	B	17	95
	Ground Beef	B	17	96
PORK, FRESH				
HAM/LEG	Center Slice	P	5	50
	Rump Portion	P	5	30
	Shank Portion	P	5	32
LOIN	Back Ribs	P	8	5
	Blade Chop	P	8	76
	Blade Chop (Bnls)	P	8	77
	Blade Roast	P	8	6
	Butterfly Chop	P	8	78
	Center Loin Roast	P	8	12
	Center Rib Roast	P	8	13
	Country Style Ribs	P	8	15
	Loin Chop	P	8	80
	Rib Chop	P	8	81
	Sirloin Chop	P	8	83
	Sirloin Cutlets	P	8	62
	Sirloin Roast	P	8	35
	Tenderloin Roast (Whole)	P	8	40
	Top Loin Chop	P	8	84
	Top Loin Chop (Bnls)	P	8	85
	Top Loin Roast (Bnls)	P	8	43
	Top Loin Roast Double (Bnls)	P	8	44
SHOULDER	Arm Picnic	P	13	2
	Arm Roast	P	13	3
	Arm Steak	P	13	46
	Blade, Boston	P	13	7
	Blade Steak	P	13	48
SIDE "BELLY"	Fresh Side	P	14	22
SPARERIBS	Spareribs	P	15	38
VARIETY MEATS	Heart	P	16	87
	Kidney	P	16	88
	Liver	P	16	89
	Tongue	P	16	92
VARIOUS	Cube Steak	P	17	95
	Ground Pork	P	17	97
	Hocks	P	17	98
	Sausage	P	17	99
	Sausage Links	P	17	100
PORK, SMOKED/CURED				
HAM/LEG	Center Slice	P	5	104
	Ham (Bnls)	P	5	105
	Ham (Whole)	P	5	106
	Rump Portion	P	5	112
	Shank Portion	P	5	113
JOWL	Jowl	P	6	108
LOIN	Back Ribs	P	8	101
	Canadian Bacon	P	8	103
	Loin Chop	P	8	109
	Rib Chop	P	8	111
SHOULDER	Picnic (Whole)	P	13	110

PRIMAL CUTS	RETAIL CUTS	SPECIES	PRIMAL	RETAIL
SIDE (BELLY)	Slab Bacon	P	14	114
	Sliced Bacon	P	14	115
SPARERIBS	Spareribs	P	15	116
VARIOUS	Hocks	P	17	107
LAMB				
BREAST	Breast	L	1	10
	Riblets	L	1	29
LEG	American Style Roast	L	7	1
	Center Slice	L	7	50
	Frenched Style Roast	L	7	21
	Sirloin Chop	L	7	83
	Sirloin Half	L	7	36
	Shank Portion	L	7	32
LOIN	Double Chop	L	8	79
	Loin Chop	L	8	80
	Loin Roast	L	8	25
RIB	Rib Chop	L	10	81
	Rib Chop (Frenched)	L	10	82
	Rib Roast	L	10	28
SHOULDER	Arm Chop	L	13	75
	Blade Chop	L	13	76
	Neck Slice	L	13	55
	Shoulder (Bnls)	L	13	34
	Square Cut (Whole)	L	13	39
VARIETY MEATS	Heart	L	16	87
	Kidney	L	16	88
	Liver	L	16	89
	Tongue	L	16	92

Meat Identification Card - Training Aid

Name: _____ Contestant Number: _____

School: _____ School Number: _____

Select: Species (1 point), Primal Cuts (2 points), and Retail Name (3 points) from listings below and fill in the column blanks beside the cut number. The score column is for tabulation only. Total - 240 points.

SPECIES – 1 point   B=Beef **P**=Pork **L**=Lamb

Cut No.	Species	Primal	Retail	Score
1.				
2.				
3.				
4.				
5.				
6.				
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35.				
36.				
37.				
38.				
39.				
40.				

Primal Cuts – 2 Points

1. Breast	2. Brisket	3. Chuck	4. Flank
5. Ham/Leg	6. Jowl	7. Leg	8. Loin
9. Plate	10. Rib	11. Round	12. Shank
13. Shoulder	14. Side "Belly"	15. Spareribs	16. Variety Meats
17. Various			

Retail Cuts – 3 Points

Roasts/Pot Roasts

1. American Style
2. Arm Picnic
3. Arm Roast
4. Arm Pot Roast (Bnls)
5. Back Ribs
6. Blade Roast
7. Blade, Boston
8. Bottom Round Roast (Bnls)
9. Bottom Round Rump Roast (Bnls)
10. Breast
11. Brisket, Whole,Bnls)
12. Center Loin Roast
13. Center Rib Roast
14. Chuck Eye Roast (Bnls)
15. Country Style Ribs
16. Cross Cuts
17. Cross Cuts (Bnls)
18. Eye Roast
19. Eye Round Roast
20. Flat Half (Bnls)
21. Frenched Style Roast
22. Fresh Side
23. Heel of Round Roast
24. Large End Roast
25. Loin Roast
26. Mock Tender Roast
27. Point Half (Bnls)
28. Rib Roast
29. Riblets
30. Rump Portion
31. Seven (7) Bone Roast
32. Shank Portion
33. Short Ribs
34. Shoulder (Bnls)
35. Sirloin Roast
36. Sirloin Half
37. Small End Roast
38. Spare Ribs
39. Square Cut (Whole)
40. Tenderloin Roast (Whole)
41. Tip Roast
42. Tip Roast,Cap Off
43. Top Loin Roast (Bnls)
44. Top Loin Roast Double (Bnls)
45. Top Round Roast

Steaks

46. Arm Steak
47. Arm Steak (Bnls)
48. Blade Steak
49. Bottom Round Steak
50. Center Slice
51. Eye Steak
52. Eye Round Steak
53. Flank Steak
54. Mock Tender Steak
55. Neck Slice
56. Porterhouse Steak
57. Round Steak
58. Round Steak (Bnls)
59. Seven (7) Bone
60. Sirloin Steak
61. Sirloin Steak (Bnls)
62. Sirloin Cutlets
63. Skirt Steak (Bnls)
64. Small End Steak
65. Small End Steak (Bnls)
66. T-Bone Steak
67. Tenderloin Steak
68. Tip Steak
69. Tip Steak,Cap Off
70. Top Blade Steak (Bnls)
71. Top Loin Steak
72. Top Loin Steak (Bnls)
73. Top Round Steak
74. Top Sirloin (Bnls)

Chops

75. Arm Chop
76. Blade Chop
77. Blade Chop (Bnls)
78. Butterfly Chop
79. Double Chop
80. Loin Chop
81. Rib Chop
82. Rib Chop (Frenched)
83. Sirloin Chop
84. Top Loin Chop
85. Top Loin Chop (Bnls)

Variety Meats

86. (BLANK)
87. Heart
88. Kidney
89. Liver
90. Oxtail
91. Sweetbread
92. Tongue
93. Tripe

Various

94. Beef for Stew
95. Cube Steak
96. Ground Beef
97. Ground Pork
98. Hocks
99. Sausage
100. Sausage Links

Smoked/ Cured Meats

101. Back Ribs
102. Brisket, Corned
103. Canadian Bacon
104. Center Slice
105. Ham (Bnls)
106. Ham (Whole)
107. Hocks
108. Jowl
109. Loin Chop
110. Picnic (Whole)
111. Rib Chop
112. Rump Portion
113. Shank Portion
114. Slab Bacon
115. Sliced Bacon
116. Spareribs

PROBLEM SOLVING

Students will be given a situational problem solving the least-cost formulation of a batch of particular meat products (hamburger, wiener, bologna, etc.). This problem will be worth 50 points and consist of procedural questions and the actual determination of the least-cost price.

GROUND BEEF FORMULATION PROBLEM TRAINING MATERIALS

Assume that you manage a meat plant that manufactures ground beef or a chain of retail stores. Your goal is to produce a fresh, wholesome product that complies with all meat inspection regulations and will have three days' shelf life in the meat case. The fat content must comply with the specifications of the stores. The cost of the product should be as low as possible.

Ground Beef Regulations (USDA)

GROUND BEEF: The terms "Ground Beef" and "Chopped Beef" are synonymous. Products so labeled must be made with fresh and/or frozen beef with or without seasoning, and without the addition of fat as such, and shall contain no more than 30% fat. It may contain added water, binders or extenders. It may contain beef cheek meat not to exceed 25%. Heart meat and tongue meat are not acceptable ingredients.

If the name is qualified by the name of a particular cut, such as "Ground Beef Round" or "Beef Chuck, Ground", the product must consist entirely of meat from the particular cut or part.

Industry Guidelines on Ground Beef Manufacture

1. To get the most desirable color and maximum shelf life, all boneless meats used to manufacture ground beef shall be fresh (not frozen), well chilled (temperature no higher than $35^{o}F$) and shall arrive at the plant within 96 hours of animal slaughter.

2. A least-cost determination shall be performed on acceptable meat ingredients to select those meats that produce the lowest-cost product that meets all ground beef guidelines.

3. To simplify the grinding and blending operation, only two meat ingredients will be used for each batch.

4. Rounding of decimals: 5-9 will be rounded up; 1-4 will be rounded down.

SAMPLE PROBLEM ONE

Use the Pearson Square to formulate a batch of ground beef to the desired fat content.

Meats:
(1) Boneless cow meat (10% fat-$.99/lb.)
(2) 75% lean beef trimmings (25% fat-$.79/lb.)

    Desired Final Fat Content: 20%
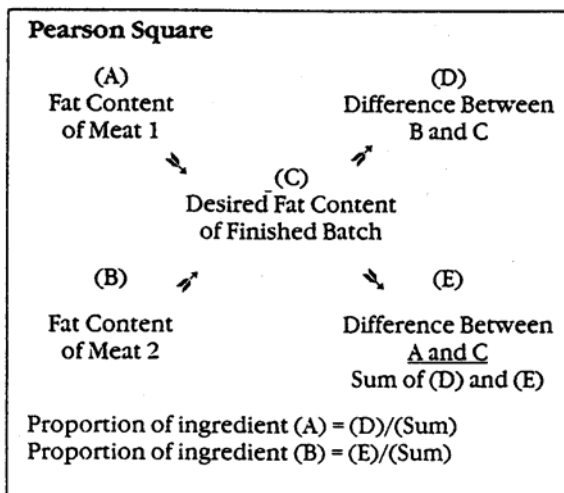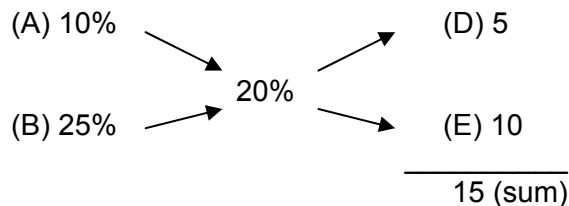   Batch Size: 1,000 lbs.

Determine:
    a. The amounts of the two types of meat that must be blended together to give the desired fat content.
    b. The meat cost of the finished product.*

NOTE: You will only be determining meat costs. In an actual situation overhead cost must also be added to the cost of the ground beef to account for labor, equipment, transportation, etc. In this exercise the student need not be concerned with these overhead costs.

To simply thes grinding and blending operation, only two meat ingredients will be used for each batch.

Rounding of decimals: 5-9 will be rounded up: 1-4 will be rounded down.

For Preceding Information:

(A) 10%   (D) 5

                20%

(B) 25%   (E) 10
                                _____
                              15 (sum)

Pearson Square

    (A)   (D)
Fat Content   Difference Between
 of Meat 1   B and C

           (C)
     Desired Fat Content
      of Finished Batch

   (B)   (E)

Fat Content   Difference Between
 of Meat 2   A and C
                 Sum of (D) and (E)

Proportion of ingredient (A) = (D)/(Sum)
Proportion of ingredient (B) = (E)/(Sum)

SAMPLE PROBLEM TWO

You must follow all government regulations and
company policies listed in the training materials.
Determine which available ingredients to use (and
at what levels) to make the lowest-priced ground
beef acceptable.

Specifications:

Desired fat content of finished product is 18%
Batch Size = 5,000 lbs.
Manufacturing date = February 10
No product over 5 days old may be used.
No; variety meats may be used.
No product over 35°F may be used.

Boneless Meat Ingredients Available

	Slaughter Date	Fat Temp	Cont.	Price
Bull meat	Feb. 6	33°F	8%	$1.05
Boneless Chuck	Feb. 7	35°F	14%	$1.00
75% lean trim	Feb. 4	32°F	25%	$0.75
50% lean trim	Feb. 6	31°F	50%	$0.55
Beef chuck meat	Feb. 7	37°F	12%	$0.70
Beef hearts	Feb. 6	32°F	15%	$0.35

Solution:
Do all potential ingredients meet government
regulations and company specifications?

Acceptable	Not Acceptable
Bull meat	75% lean trim (too old)
Boneless chuck	Chuck meat (too warm)
50% lean trim	Beef hearts (not allowed)

Therefore, to produce desired fat content, product could
be made from either of the following two combinations:

   (1)   Bull meat and 50% lean trim
   (2)   Boneless chuck and 50% lean trim
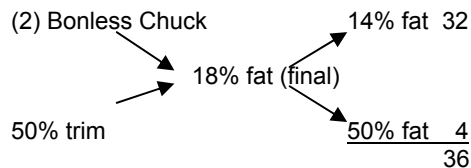
Which combination results in the lowest meat cost?

(1) Bull meat   8% fat 32

           18% fat (final)

50% trim   50% fat 10
                            42
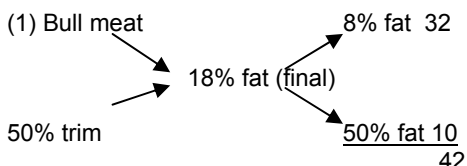
Proportions:
Bull meat = 32/42 =   0.76 or 3,800 lbs.
50% trim = 10/42 =   0.24 or 1,200 lbs.
                         5,000 lbs.

Costs:
Bull meat 0.76 x $1.05 = $0.798
50% trim 0.24 x $.55 = $0.132
                     $0.93 or $.93/lb.

(2) Bonless Chuck   14% fat 32

           18% fat (final)

50% trim   50% fat 4
                            36

Proportions:
Boneless chuck = 32/36 = 0.89   or 4.450 lbs.
50% trim = 4/36 = 0.11   or   550 lbs.
                         5,000 lbs.

Cost:
Bull meat 0.89 x $1.00 = $0.89
50% trim 0.11 x $.55 = $0.06
                   $0.95 or $.95/lb.

Final Solution --Meats to be Used:

   Bull meat   3,800 lbs.
   50% trim   1,200 lbs.

   Meat costs: $0.93 per pound

Scoring:
The answer to the formulation problem will count ten
points. There will be an additional eight questions, worth
five points each. To facilitate computer scoring of this
exercise, participants will be given a list of ten or more
meat price combinations and be required to select the
correct one, based on the above calculation. All
problems will be worked to three decimal places and
rounded to two places. If the third decimal is 5 or more,
the number will be rounded up.

Answers to the eight additional questions will be
selected from four choices.

SAMPLE TEST ITEMS FOR SAMPLE PROBLEM TWO
Check the correct solution:

1.	Bull and chuck meat	(0.89)
2.	Boneless chuck and 75% lean trim	(0.91)
3.	Bull meat and 50% lean trim	(0.93)
4.	Boneless chuck and 50% lean trim	(0.90)
5.	Bull meat and 50% lean trim	(0.88)
6.	Beef hearts and 75% lean trim	(0.68)
7.	Bull meat and 50% lean trim	(0.97)
8.	Beef chuck meat and bull meat	(1.04)
9.	75% lean trim and 50% lean trim	(0.67)
10.	50% lean trim and bull meat	(0.87)